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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/955,141	09/19/2001	Stephen B. Pollard	30004069-2	8370

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EXAMINER

TABATABAI, ABOLFAZL

ART UNIT PAPER NUMBER

2625

DATE MAILED: 02/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/955,141	POLLARD ET AL.	
	Examiner	Art Unit	
	Abolfazl Tabatabai	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1, 3-6, 8, 9, 11, 12, 14-16, 18-24, 26-30, 32-34, 36-38, 40-50 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hardin et al (U S 5,586,063) in view of Maurer (U S 6,272,231 B1).

Regarding claim 1, Hardin discloses target viewing apparatus comprising a plurality of spaced electronic viewing cameras for viewing a predetermined region and for providing respective image signals (column 4, lines 62-67 and column 2, lines 62-67), the field of view of at least two viewing cameras overlapping in at least a part of

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said region (column 9, lines 1-5), identification means for identifying or detecting a target object within said part of said region (column 2, lines 62-67), control means responsive to said identifying means for selecting an image signal from a selected one of said at least two cameras (figs. 2 element 16, 20 and 22).

However, Hardin is silent about the specific details wherein said control means includes means for assessing the pose of the target and selection means arranged for selecting the said one camera at least partly upon the assessed pose.

In the same field of endeavor (data processing and measuring), however, Maurer discloses wavelet-based facial motion capture for avatar animation comprising control means includes means for assessing the pose of the target and selection means arranged for selecting the said one camera at least partly upon the assessed pose (column 10, lines 10-19).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use assessing the pose of the target as taught by Maurer in the system of Hardin because, Maurer provides an improved advanced system for facial feature sensing, and more particularly, to a vision-based motion capture system that allows real-time finding, tracking and classification of facial features for input into a graphics engine that animates an avatar. The use of markers for facial motion capture is cumbersome and has generally restricted the use of facial motion capture to high-cost applications such as movie production. Quality facial feature sensing is a significant advantage because facial gestures are a primordial means of communications.

Regarding claim 3, However, Hardin is silent about the specific details regarding an apparatus according to claim 2 wherein the required pose is a predetermined pose.

In the same field of endeavor (data processing and measuring), however, Maurer discloses wavelet-based facial motion capture for avatar animation comprising required pose is a predetermined pose (column 14, lines 60-62).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use assessing the pose of the target as taught by Maurer in the system of Hardin because, Maurer provides an improved advanced system for facial feature sensing, and more particularly, to a vision-based motion capture system that allows real-time finding, tracking and classification of facial features for input into a graphics engine that animates an avatar. The use of markers for facial motion capture is cumbersome and has generally restricted the use of facial motion capture to high-cost applications such as movie production. Quality facial feature sensing is a significant advantage because facial gestures are a primordial means of communications.

Regarding claim 4, However, Hardin is silent about the specific details regarding an apparatus according to claim 2 and including means for determining parameters associated with the target and/or other parts of the said part of said region, and for determining the required pose as a function thereof.

In the same field of endeavor (data processing and measuring), however, Maurer discloses wavelet-based facial motion capture for avatar animation comprises determining parameters associated with the target and/or other parts of the said part of

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said region, and for determining the required pose as a function thereof (column 9, lines 37-39).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use determining parameters associated with the target as taught by Maurer in the system of Hardin because, Maurer provides an improved advanced system for facial feature sensing, and more particularly, to a vision-based motion capture system that allows real-time finding, tracking and classification of facial features for input into a graphics engine that animates an avatar. The use of markers for facial motion capture is cumbersome and has generally restricted the use of facial motion capture to high-cost applications such as movie production. Quality facial feature sensing is a significant advantage because facial gestures are a primordial means of communications.

Regarding claim 5, Hardin discloses an apparatus according to claim 4 wherein the step of determining the required pose is made in conjunction with a standard predetermined pose (column 14, lines 5-19).

Regarding claim 6, Hardin discloses an apparatus according to claim 4 wherein the determined parameters include at least one of target location, velocity/speed, and target environment (column 14, lines 7-13).

Claim 8, is similarly analyzed as claim 6 above.

Regarding claim 9, Hardin discloses an apparatus according to claim 1 wherein said assessing means includes means for determining the location of the target in

relation to a map of the region and for assessing the pose at least in part in dependence thereon (column 7, lines 53-60).

Regarding claim 11, Hardin discloses an apparatus according to claim 10 wherein the further camera is arranged for viewing substantially all of the predetermined region (column 4, lines 16-18).

Regarding claim 12, Hardin discloses apparatus according to claim 10 wherein said assessing means includes means for measuring a visible characteristic of the target and for assessing the pose at least in part in dependence thereon (column 6, lines 34-39 and 55-56).

Regarding claim 14, However, Hardin is silent about the specific details regarding an apparatus according to claim 10 wherein the target is specified to have a predetermined general three dimensional shape, said assessing means includes means for detecting a two dimensional image shape derived therefrom and for assessing the pose at least in dependence thereon.

In the same field of endeavor (data processing and measuring), however, Maurer discloses wavelet-based facial motion capture for avatar animation comprises predetermined general three dimensional shape, said assessing means includes means for detecting a two dimensional image shape derived therefrom and for assessing the pose at least in dependence thereon (column 10, lines 40-44 and 51-65).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use predetermined general three dimensional shape, and detecting a two dimensional image shape as taught by Maurer in the system of Hardin

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because, Maurer provides an improved advanced system for facial feature sensing, and more particularly, to a vision-based motion capture system that allows real-time finding, tracking and classification of facial features for input into a graphics engine that animates an avatar. The use of markers for facial motion capture is cumbersome and has generally restricted the use of facial motion capture to high-cost applications such as movie production. Quality facial feature sensing is a significant advantage because facial gestures are a primordial means of communications.

Regarding claim 15, However, Hardin is silent about the specific details regarding an apparatus according to claim 14 wherein the target has a specified rigid shape.

In the same field of endeavor (data processing and measuring), however, Maurer discloses wavelet-based facial motion capture for avatar animation comprises the target has a specified rigid shape (column 3, lines 39-65).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use rigid shape as taught by Maurer in the system of Hardin because, Maurer provides an improved advanced system for facial feature sensing, and more particularly, to a vision-based motion capture system that allows real-time finding, tracking and classification of facial features for input into a graphics engine that animates an avatar. The use of markers for facial motion capture is cumbersome and has generally restricted the use of facial motion capture to high-cost applications such as movie production. Quality facial feature sensing is a significant advantage because facial gestures are a primordial means of communications.

Regarding claim 16, However, Hardin is silent about the specific details regarding an apparatus according to claim 14 wherein the target has a specified flexible shape and the assessing means includes means for modeling the flexible shape and matching a two dimensional image shape thereto, whereby to assess the pose.

In the same field of endeavor (data processing and measuring), however, Maurer discloses wavelet-based facial motion capture for avatar animation comprises the target has a specified flexible shape and the assessing means includes means for modeling the flexible shape and matching a two dimensional image shape thereto, whereby to assess the pose (column 10, lines 55-62).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use flexible shape and matching a two dimensional image shape as taught by Maurer in the system of Hardin because, Maurer provides an improved advanced system for facial feature sensing, and more particularly, to a vision-based motion capture system that allows real-time finding, tracking and classification of facial features for input into a graphics engine that animates an avatar. The use of markers for facial motion capture is cumbersome and has generally restricted the use of facial motion capture to high-cost applications such as movie production. Quality facial feature sensing is a significant advantage because facial gestures are a primordial means of communications.

Regarding claim 18, Hardin discloses an apparatus according to claim 1 including means for controlling the plurality of cameras to track the target as it moves between the fields of view of different cameras (column 14, lines 15-18).

Regarding claim 19, Hardin discloses an apparatus according to claim 18 arranged such that not all the of the plurality of cameras are simultaneously active, but wherein at least one of said at least two cameras is activated in the presence of said target in the said part of said region (see abstract and column 5, lines 30-35).

Regarding claim 20, Hardin discloses an apparatus according to claim 19 wherein at least said two cameras are activated in the presence of said target in the said part of said region (see abstract and column 1, lines 59-63).

Regarding claim 21, Hardin discloses an apparatus according to claim 20 wherein selection of said one camera is by selection of its image signal (column 11, lines 18-21).

Regarding claim 22, Hardin discloses apparatus according to claim 1 wherein selection of said one camera is effected by selective activation thereof (column 2, lines 34-36 and column 4, lines 46-51).

Regarding claim 23, Hardin discloses an apparatus according to claim 1 wherein the presence of the target is initially identified from at least one said image signal by detection of movement (column 9, lines 1-5).

Regarding claim 24, However, Hardin is silent about the specific details regarding an apparatus according to claim 1 wherein the presence of the target is initially identified from at least one said image signal by detection of a predetermined colour, hue, texture and/or shape.

In the same field of endeavor (data processing and measuring), however, Maurer discloses wavelet-based facial motion capture for avatar animation comprises presence

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of the target is initially identified from at least one said image signal by detection of a predetermined colour, hue, texture and/or shape (column 14, lines 8-14).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use presence of the target is initially identified from at least one said image signal by detection of a predetermined colour, hue, texture and/or shape as taught by Maurer in the system of Hardin because, Maurer provides an improved advanced system for facial feature sensing, and more particularly, to a vision-based motion capture system that allows real-time finding, tracking and classification of facial features for input into a graphics engine that animates an avatar. The use of markers for facial motion capture is cumbersome and has generally restricted the use of facial motion capture to high-cost applications such as movie production. Quality facial feature sensing is a significant advantage because facial gestures are a primordial means of communications.

Regarding claim 26, However, Hardin is silent about the specific details regarding an apparatus according to claim 1 wherein the control means is arranged to alter the mode of identifying the target after an initial identification thereof.

In the same field of endeavor (data processing and measuring), however, Maurer discloses wavelet-based facial motion capture for avatar animation comprises the control means is arranged to alter the mode of identifying the target after an initial identification thereof (column 7, lines 55-58).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use alter the mode of identifying the target as taught by Maurer

in the system of Hardin because, Maurer provides an improved advanced system for facial feature sensing, and more particularly, to a vision-based motion capture system that allows real-time finding, tracking and classification of facial features for input into a graphics engine that animates an avatar. The use of markers for facial motion capture is cumbersome and has generally restricted the use of facial motion capture to high-cost applications such as movie production. Quality facial feature sensing is a significant advantage because facial gestures are a primordial means of communications.

Regarding claim 27, Hardin discloses an apparatus according to claim 1 wherein said selected camera is a video camera capable of continuous production of a said image signal (column 11, lines 53-56).

Regarding claim 28, Hardin discloses an apparatus according to claim 1 wherein said selected camera is a digital photographic camera capable of providing image signals at discrete intervals (fig. 2 element 22).

Regarding claim 29, Hardin discloses apparatus according to claim 1 and including means for displaying and/or recording the image signal from said selected camera (fig. 1 element 10).

Claim 30, is similarly analyzed as claim 1 above.

Claim 32, is similarly analyzed as claim 3 above.

Claim 33, is similarly analyzed as claim 5 above.

Claim 34, is similarly analyzed as claim 6 above.

Claim 36, is similarly analyzed as claim 8 above.

Claim 37, is similarly analyzed as claim 9 above.

Claim 38, is similarly analyzed as claim 12 above.

Claim 40, is similarly analyzed as claim 13 above.

Claim 41, is similarly analyzed as claim 14 above.

Claim 42, is similarly analyzed as claim 15 above.

Claim 43, is similarly analyzed as claim 16 above.

Claim 44, is similarly analyzed as claim 18 above.

Claim 45 is similarly analyzed as claim 19 above.

Claim 46, is similarly analyzed as claim 206 above.

Claim 47, is similarly analyzed as claim 21 above.

Claim 48, is similarly analyzed as claim 22 above.

Claim 49, is similarly analyzed as claim 23 above.

Claim 50, is similarly analyzed as claim 24 above.

Claim 53, is similarly analyzed as claim 29 above.

3. Claims 2, 7, 31 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hardin et al (U S 5,586,063) and Maurer (U S 6,272,231 B1) as applied to claims 1 and 30 above and further in view of Ulich et al (U S 5,267,329).

Regarding claim 2, Hardin and Maurer are silent about the specific details regarding an apparatus according to claim 1 wherein the selection means is arranged for selecting the said one camera to which the target is judged to present a pose nearest to a required pose.

In the same field of endeavor (target detection), however, Ulich discloses process for automatically detecting and locating a target from a plurality of two dimensional images

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comprises the selection means is arranged for selecting the said one camera to which the target is judged to present a pose nearest to a required pose (column 4, lines 22-29).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use target is judged as taught by Ulich in the system of Hardin because, Ulich provides an improved advanced system for detecting and locating a target from a plurality of two dimensional images. This system includes some or all of the following steps such as noise, reduction, spatial filtering, and noise parameter extraction, localization, recognition, range and sub-image mosaic generation.

Regarding claim 7, Hardin and Maurer are silent about the specific details regarding an apparatus according to claim 1 wherein the selection means comprises means for confirming that target is not excessively obscured from the view of the camera to be selected.

In the same field of endeavor (target detection), however, Ulich discloses process for automatically detecting and locating a target from a plurality of two dimensional images comprises the selection means comprises means for confirming that target is not 24-27).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use confirmation step as taught by Ulich in the system of Hardin because, Ulich provides an improved advanced system for detecting and locating a target from a plurality of two dimensional images. This system includes some or all of

the following steps such as noise, reduction, spatial filtering, noise parameter extraction, localization, recognition, range and sub-image mosaic generation.

Claim 31, is similarly analyzed as claim 2 above.

Claim 35, is similarly analyzed as claim 7 above.

4. Claims 10,13, 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hardin et al (U S 5,586,063) and Maurer (U S 6,272,231 B1) as applied to claims 1 and 30 above and further in view of Pingali (U S 6,005,610).

Regarding claim 10, Hardin and Maurer are silent about the specific details regarding an apparatus according to claim 1 wherein said assessing means includes means for analysing the signal from a said viewing camera viewing the target, or a further camera viewing the target, and for assessing the pose at least in part in dependence thereon.

In the same field of endeavor (target detection), however, Pingali discloses audio visual object localization and tracking system comprises assessing means includes means for analysing the signal from a said viewing camera viewing the target, or a further camera viewing the target, and for assessing the pose at least in part in dependence thereon (column 4, lines 28-32).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use analysing the signal as taught by Pingali in the system of Hardin because, Pingali provides an improved advanced system for object localization and tracking and in particular, a system and process for integrating both audio and visual cues to localize and track a moving object, typically a person, in real-time.

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Regarding claim 13, Hardin and Maurer are silent about the specific details regarding an apparatus according to claim 12 wherein said visible characteristic is a flesh-tone area, said assessing means includes means for measuring the area and for assessing the pose at least in part in dependence thereon.

In the same field of endeavor (target detection), however, Pingali discloses audio visual object localization and tracking system comprises visible characteristic is a flesh-tone area, said assessing means includes means for measuring the area and for assessing the pose at least in part in dependence thereon (column 7, lines 18-29).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use flesh-tone as taught by Pingali in the system of Hardin because, Pingali provides an improved advanced system for object localization and tracking and in particular, a system and process for integrating both audio and visual cues to localize and track a moving object, typically a person, in real-time.

Claim 39, is similarly analyzed as claim 10 above.

Claim 40, is similarly analyzed as claim 13 above.

5. Claims 17, 25, 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hardin et al (U S 5,586,063) and Maurer (U S 6,272,231 B1) as applied to claims 1 and 30 above and further in view of League et al (U S 5,668,739).

Regarding claim 17, Hardin and Maurer are silent about the specific details regarding an apparatus according to claim 1 wherein the assessing means is arranged so that the manner of assessing pose can change over time.

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In the same field of endeavor (target detection), however, League discloses system for tracking objects using a detection comprises assessing means is arranged so that the manner of assessing pose can change over time (column 12, lines 49-55).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use over-time as taught by Peague in the system of Hardin because, Peague provides an improved advanced system for rejecting noise to prevent false detections.

Regarding claim 25, Hardin and Maurer are silent about the specific details regarding an apparatus according to claim 1 wherein the presence of a target is detected by an alarm sensor associated with said part of said region.

In the same field of endeavor (target detection), however, League discloses system for tracking objects using a detection comprises the presence of a target is detected by an alarm sensor associated with said part of said region (column 13, lines 1-4).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use alarm sensor as taught by Peague in the system of Hardin because, Peague provides an improved advanced system for rejecting noise to prevent false detections.

Claim 51, is similarly analyzed as claim 25 above.

Claim 52, is similarly analyzed as claim 17 above.

Contact Information

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6. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to ABOLFAZL TABATABAI whose telephone number is (703) 306-5917.

The Examiner can normally be reached on Monday through Friday from 9:30 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Mehta Bhavesh M, can be reached at (703) 308-5246.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Abolfazl Tabatabai

Patent Examiner

Group Art Unit 2625

February 3, 2005

A-Tabatabai

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PRIMARY EXAMINER